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ABSTRACT

This study examined processes through which two teacher educators and their students learned about online collaboration. Participants collaborated on a set of integrated units of curriculum design that would be relevant to what students in three different courses were studying and would show them the advantages of collaboration. Students selected topics of mutual interest, then over the semester built an interdisciplinary curriculum around their topic, drawing on the expertise of students in each course. Students communicated via electronic mail (e-mail). Results were posted on the World Wide Web. Researchers examined online communication between the teacher educators, between the educators and their students, and between students. Students reported the status of the projects weekly via e-mail and completed project evaluations at the conclusion. The professors reflected regularly on the project's progress and e-mailed those thoughts to one another, providing feedback to their students in individual and group e-mail messages. Telecommunications permitted an expanded team to come together online to pool their resources and expertise. The collaboration helped students build learning communities which fostered professional development; caused students to successfully overcome challenges they once considered insurmountable; and facilitated teachers' reflective instruction. (SM)

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Creating Curriculum Online: A Cross-Campus, Cross-Disciplinary Project for Preservice Teachers

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Creating Curriculum Online: A Cross-Campus, Cross-Disciplinary Project for Preservice Teachers

Hello Alaska Team! Do you wish to continue to focus on the effects of industry, people, and the environment? If so, here are a few suggestions to consider. Under industry--how about focusing on the gold mining with which you could use the book B. mentioned, The Bite of the Gold Bug. Under people-- how about looking into their language (slang) and consider folk songs the children can sing. later, they may want to write their own songs. Under environment--how about considering how the cold weather and short days affect their way of life (jobs, recreation, survival). We hope these ideas help you out. Good luck! (10/3/95).

YAHOO! Fellow telecommunicators, eureka! I just found a list of books relating to our topic in the September 1992 issue of (surprise, surprise) Booklinks. I only just discovered this yesterday and haven't taken a good look at it but I wanted to pass this information along to you in case the system goes down over the weekend. The title of the article is "The Vote is Yours!" by Maeve Visser Knoth. (Notice it takes a first generation immigrant American to offer a fresh view of representative government; we natives have become so blase :) I hope you can find this in the library at FSU (10/13/95).

Dear Project Partners, I absolutely loved the idea of dividing the class into groups and pulling problems out of a hat for them to deal with. With this topic, that is about as hands-on as you can get. . . . I haven't had a chance to get back to the library since you said that you changed grades from fourth to fifth. Therefore, I will send more books as soon as I find them. Thanks for the outline; that helped tremendously. As soon as I find them--sorry, the computer is going haywire?!? (10/18/95).

Dr. Lamme, we have all been very cooperative and we seem to be getting great sources and ideas from each other. We all know that our grade depends on everyone in the group, so we are trying to be fair and helpful. It is just a great group. I wish we had more guidelines in the beginning. I thought we would have a lot more done by now. It is a very different assignment and not nearly as bad as I originally thought. (I was a computer-phobe!) (10/23/95).

The above quotes, pulled from a semester of online messages between groups of preservice teachers at Florida State University and the University of Florida, only begin to portray the levels of anxiety and pleasure that can result from the collaborative process of developing a cross-disciplinary curriculum project with students from a distant university setting.

During the Fall, 1995 semester, two university professors, who met online through the Florida Information Resource Network's group conferences, decided to attempt an online project with their students. Barbara Tobin, of Florida State University (FSU), and Linda Lamme, of the University of Florida (UF), designed a cross-university, online project for their social studies, reading, children's literature, and language arts methods courses. Linda had been gradually integrating more telecommunication into her classes, requiring students to communicate with one another and the world of other professionals through electronic mail and the electronic bulletin boards of FIRN's Group Conferencing. Barbara was at a less advanced level of development when this project began, having only recently introduced electronic mail to her students for dialoguing with her and for penpal projects with elementary students.

The following study explores the processes through which these two professors and their students learned about online collaboration. Linda taught language arts to an undergraduate class and children's literature to a graduate class in the elementary education program. Barbara taught a reading methods course to a class of undergraduate elementary education majors and worked closely for this project with a colleague who taught social studies to the same students of this blocked program of studies. Linda remarks, "We collaborated on a set of integrated units of curriculum design that would be relevant to what all of the students were studying and show them, at the same time, the advantages of collaboration. In this project, we got the best of both worlds: strong individual methods courses and curricular integration."

Students selected topics of mutual interest and over the semester built an interdisciplinary curriculum around their topic, drawing upon the expertise of the students in each of the three courses. The 76 students formed into 13 groups of approximately six students. Two FSU students shared responsibility for the development of their project with two UF children's literature students and two UF language arts students. Students communicated with one another via the Florida Information Resource Network's (FIRN) electronic mail system, Firnmail, accessible to both groups in their respective university computer laboratories free of charge. The resulting products were later posted to a homepage on the World Wide Web, which can be found at http://www.coe.ufl.edu/faculty/lamme/project/main.html.

Data from this project were collected in the form of online communication between Linda and Barbara, communication between the two professors and their students, and communication between students. Via electronic mail, students reported the status of their projects weekly and completed evaluations of the project at the conclusion of the project. Professors reflected regularly upon the progress of the project and e-mailed these thoughts to one another, providing feedback to their students in both individual and group e-mail messages.

Jeane, a doctoral student at the University of Florida, joined this study after the collaborative project had been completed. Thanks to a volunteer graduate student of technology, electronic messages from the project correspondence had been saved in word processing files on disk and were made available to Jeane. She sorted the messages according to themes the data suggested exist in the process of online collaboration. After initial domaining of messages by parts of the process, these process categories were sorted and coded by relationships to one another using a constant comparative method advocated in the development of grounded theory. Finally, decisions were made regarding which parts of the findings would be most significant to explore for an anticipated audience of teacher educators. The goal of the current paper is to identify benefits we found associated with the development of online curriculum in this one project and to assist other interested teacher educators in their efforts to design similar experiences for their preservice students.

The Process of Collaboration

An analysis of the data revealed a typical pattern of stages each team moved through in the process of building curriculum online. In general the teams tended to progress through the following stages in the collaborative process:

1. Demonstrate confusion regarding the task.

2. Question their online peers in order to clarify the assignment (sometimes successfully and sometimes less-successfully).

3. Convey grading concerns to the professor in charge. Students questioned how they might be evaluated if the final product would ultimately be the result of a group effort.

4. Negotiate, with the online peers, the topic for the unit.

5. Narrow or redefine the topics. Students expressed concerns about covering too much or availability of resources.

6. Panic and appeal to peers for feedback regarding how well the topic met the respective professor's requirements.

7. Locate resources for the project. Students used the World Wide Web to conduct general searches for materials, lesson ideas, and children's literature references.

8. Share beginnings of searches with online peer group.

9. Divide tasks within the team. Students negotiated responsibility for students of each subject area but also divided tasks between in-class members of the team.

10. Encounter the first round of technological literacy difficulties as they attempted to send semantic webs to teammates.

11. Refine the audience for the project.

12. Develop strategies for coping with absences of partners who engaged in field experiences. (This is the level at which much of the "do your own thing and we'll put them together later" strategies surfaced, if indeed this was the approach of the group).

13. Renegotiation of assignments/idea sharing/appeals for feedback.

(This stage continued throughout most of the rest of the project.)

14. Identify deadlines and encourage teammates to help them successfully meet the deadlines. (This stage often involved "coaching" less-committed partners or assisting partners with special difficulties.)

15. Assemble the project pieces and construct final product for the website.

Positive Learning Outcomes of Developing Curriculum Collaboratively Online

Our analysis of this project indicated that the process of becoming a curricular collaborator online helped students build learning communities which fostered professional development, caused students to successfully overcome challenges they once considered insurmountable, and facilitated reflective instruction in Barbara and Linda's methods courses as they, too, evolved as online collaborators.

Online Collaboration Forms a Professional Learning Community

Participation in an online collaborative project helped Barbara's and Linda's students become part of a community of colleagues with similar learning goals and interests. Students quickly realized how interrelated their tasks were and how dependent upon one another they would be for the ultimate success of the project. As a result, students learned how to coach one another in their new learnings, how to thoughtfully disagree when perspectives on teaching differed, and how to negotiate the direction of the project. Students reported an increased sense of responsibility when they were aware that their part of the job was necessary for the good of the whole group--even when part of that group remained "invisible" to them. This sense of responsibility helped make the construction of new content knowledge more meaningful to the participants. They also felt that the team of students from the other university appreciated them when they made suggestions to help them better complete their tasks.

Examples of the community feeling permeate the students' messages to one another. When one of the participants grew concerned about the progress of one of her teammates, she sent her a message detailing the teammate's specific responsibilities for locating websites, teaching her how to find them, and offering further assistance if she needed it. Another student, concerned about her same-university partner's commitment to the project, arranged her schedule so she could accompany her partner to the library to locate resources. All contributions by partners were warmly received with many thanks from the recipients, and were usually accompanied with appeals for feedback and direction for the next phase of the project. A pair of students on the Alaska team, in one of their initial messages,

requested information on the target age of the project and suggested possible topics for exploring Alaskan culture. Following this, they appealed, "We hope these ideas help you out. If we are moving in the wrong direction of what you are looking for, please let us know. We'll keep on thinking of new and exciting ideas!"

Students clearly felt committed to constructing projects which would satisfy their partners. "Let us know what we can do!" and "Thank you so much," were frequent lines in team members' messages. Their efforts at conducting wide and thorough searches for quality resources and thoughtful dialogue surrounding the lessons for students contributed to their preparation for teaching. One student sent a frantic message to Linda addressing how quickly she needed to learn to use the World Wide Web so she could help her partners find the best literature and meet their deadlines.

The community broadened as a result of being online with students from another university. One activity suggestion centered on a learning experience one student remembered from her own schooling. Another student explained the use of "guided imagery" by detailing its usefulness for learning in one of her methods courses. One student's participating teacher out in the schools even volunteered to assist with ideas for the group, since she wanted to use part of the thematic unit with her own students. The student told her university partners in an email message, "We are going to work on this together to come up with some really good lessons to teach the class." In her telecommunications portfolio submitted at the end of the semester, one student explained, "I've actually gotten a double lesson: how to use the computer and how to pool my resources. Having so many colleagues at your fingertips is terrific. . . . People who knew our topic gave completely unsolicited ideas! What a great thing!" Another student commented, "The thing I enjoyed most about the project was having constant communication and feedback from peers and professors."

As the semester progressed, students generally moved from fearful to grateful in attitude toward the online collaboration, finding that they could "pull together nicely" and be "serious about working together to achieve the same goal." The connection with online colleagues was recognized by more than one student as a "powerful tool" for conquering teacher isolation. A sense of "we're all in this together" reinforced students' commitments to one another.

Online Collaboration Encourages Preservice Teachers to Accept Professional Challenges

Challenges to traditional ways of researching, reporting, and thinking are common in online, collaborative projects like this. Developing the technological skills to research topics online proved to be one of the most difficult obstacles initially facing these students. Most of them entered the project with little

telecommunications experience, and were confronted with the challenge of becoming computer-literate in order to support their team. Many students reported initial feelings of technological inadequacy. "When I first looked at the syllabus for this course," one student noted, "I was terrified. I had never used a computer on my own." Another student confessed, "Sending the initial message to the FSU students was my first real experience with e-mail". In spite of this challenge to overcome their "computer illiteracy," students quickly learned ways to locate up to date resources by downloading curricular information from the World Wide Web, joining electronic discussion groups to seek assistance from other professionals and accessing online book reviews of books not yet available in local libraries and bookstores.

Another challenge relating to technological incompetence that the students, faced was that of merging the text of different e-mail systems and word processing files. This program incompatability emerged as a major problem when the deadline for the transfer of files between universites for the web posting became imminent. The students pooled their knowledge so that the groups might solve this problem that threatened to have them retyping large files and "snailmailing" disks. One student used online peer tutoring to help defuse the mounting tension:

> I'm not sure I understand your problem. Is it that you are using IBM and labs are MAC (vice versa)? Is it just the programs are different? In either case, I believe you would be able to convert. MACs have a converter program that you find under the Apple File Exchange (under Utilities) then you can convert it top/from a MS-DOS format.

Most students were proud of themselves for their persistence in eventually overcoming their technological inadequacies, an issue which many classroom teachers must face. " I look back on all the frustration and confusion," commented one student, "And realize I am 200% better in computers than before".

Students also learned that disagreements within their group about the pedagogical content of their projects must be addressed, since the final work would include the whole group as project developers. Therefore, students had to think critically about their philosophies so they would be better able to communicate these arguments to their online colleagues. Several of the students commented that their interactions with the other university's students forced them to become more articulate about their lesson ideas and underlying theories. Students committed to using only the best, recent children's literature had to gently convey a persuasive message to peers whose selections were somewhat out dated. One student, concerned about possible Native American stereotyping in the graphics of her group's project, was forced to identify her unease before her peers. She also lamented her unresolved concerns about the quality of the unit to both professors:

> I feel like we did more of a topic study than a theme study. I just read an interesting article..... that talks about the potential dangers of theme studies. He says that a theme study tends to make a statement like "We need to be interdependent with each other." A topic study is a study of bears, multiplication or the Seminoles. Topic studies tend to be superficial while theme studies tend to dig deeply into ideas and issues..... I wish [our] team could have had input from the very beginning (as far as choice of themes) because I think we got ourselves into a real trap by doing a topic study of the Seminoles.

Limited and unreliable computer lab facilities, consuming grade concerns which sometimes overshadowed the significance of the process, and lack of time left all participants feeling stressed, rushed, and a little unfinished. The professors not only watched for the "teachable moments" when curricular concerns were addressed in online dialogue, but they also counseled students whose partners demonstrated little commitment to the final project. Both Linda and Barbara recall the challenge of assuming responsibility for this project in addition to their regular teaching duties and finding that they, too, were novices at this process of collaboration online.

Despite these numerous technological, pedagogical, and time and space constraints, students learned that for the good of the group, the project must move on regardless--a lesson not unlike ones they will encounter as full-time teachers. They learned to work around one another's schedules and limitations, and they found ways to redirect the flow of the projects when necessary. One student noted, "I think it worked well to work with [our partners] on this project. It taught us a lot about working with others when communication is a little more difficult".

The sense of achieving a true collaboration was a divided issue. Although many pairs lauded the contributions of their online partners to their professors, a number of students from both sides expressed their perception of unequal contributions, in terms of both quantity and quality, and of being abandoned by their partners for long periods of time. Different program schedules for field experience and alternating peaks of due dates in other coursework contributed to this; as did the possessiveness felt by some local pairs who felt ownership of an idea, even the topic, if it arose initially from them. The following extracts from their final evaluations reveal their perceptions of the unbalanced loads carried, and the ineffectiveness of the communication process, that at times impeded the building an authentic collaborative community:

> Sometimes the collaborative process was a bit frustrating, waiting weeks to get replies from messages.

> I don't feel like we really collaborated. Obviously, we exchanged information, but we didn't discuss ideas . . . just did the assignment and sent it to the other members.
>
> They have had some good ideas, though we have felt that they have been trying to take off on some tangents that we did not feel appropriate.
>
> Our buddies made the effort yet much of the material we had already or we did not feel was exactly what we wanted. We had great communications with them, yet there were not that many valuable resources.
>
> It seemed as though they had ther own agenda as what type of unit they wanted to put out and did not seem to correlate with our goals in all cases. They seemed to bring a great deal more of the racial issues into play which in can add to the units complexity and broaden our viewpoint.

The student who described the project as a "wonderful way to exchange ideas" and considered herself "lucky" to have been part of such an insightful, well-matched group of students, may have identified a factor constraining the development of the collaborative process, that being the fact that some of the most capable and motivated learners were matched with partners who were not willing or able to meet their standards of quality control.

Despite the shades of feeling regarding collaborative success, all students indicated that the project and the research they did in preparation for the project caused them to investigate curricular possibilities that would otherwise have gone unexamined, question assumptions about their teaching philosophies, and expand the scope of potential collaborative ventures in the future. We might argue that their success in the face of multi-layered difficulties, increased the likelihood that these university students will continue to demonstrate persistence in their professional curriculum development efforts as future teachers.

Online Collaboration Between Professors Mirrors Process of Students

Both Barbara and Linda learned much about themselves as teacher educators as a result of their involvement in the online project. The collaborative nature of the project and its experimental qualities required the professors to remain in close communication with one another, causing them to reflect regularly upon the learnings of their students, engage in the same kind of curricular negotiation their students were facing, and tailor their in-class instruction to meet the needs of their students. Barbara and Linda, themselves new to online, collaborative, curricular design, found themselves constantly growing to understand their students' challenges since they, too, experienced the difficulties and joys of online collaboration. As students generated and pieced together their projects, Barbara and

Linda decided how much to add as introductions to pieces, how to best address less-productive partners, and how to share information from incompatible computer networks and programs. As partners, they discussed teaching issues and how to compensate for difficulties their students were encountering, such as the lack of sufficient time to devote to online conferring and insufficient background in issues related to curricular planning.

The effect of participating in this project on Barbara's professional development was substantial. Despite the struggles experienced by all involved, she found the overall results produced by her community of novices increased her confidence in risktaking and improved her teaching and learning. Like many of her students and colleagues, she had for too long hesitated, lacking the courage to confront the challenges of harnessing the potential of this exciting, yet intimidating technology. With the support of a more experienced colleague, Linda, Barbara was able to learn the same lesson as her students, that a collaborative community can together overcome severe constraints to extend its learning capacity for achieving innovative curricular approaches. Linda became her role model for ongoing growth, to keep her moving forward from this project, unafraid of failure, to explore the infinite possibilities of collaborative telecommunications.

Conclusion

This experimental project of developing online, cross-disciplinary curriculum produced qualitatively different learning environments for the methods courses taught by these two professors. Students, given choice and responsibility for working as a team, experienced the kind of interdependence they will expect of their future students. As they learned to become computer literate and to negotiate topics, responsibilities, and progress towards goals by electronic mail, they built a learning community that moved well beyond anything available in the traditional, one-teacher/one-class methods classroom. By considering the perspectives of students from another program, the participating students gained a new lens through which to view curriculum development. They learned to critically evaluate their own contributions to a project with a potential global audience and found that the dialogue surrounding the curriculum development validated the importance of what they were otherwise reading and learning in their methods courses.

Despite the predictable abundance of technical and organizational glitches that surfaced in this complex, innovative project, creating recurring periods of confusion and frustration, the participants gained insights into the powerful potential of telecommunications to facilitate peer collaboration. Comments like the following make it seem worthwhile for teacher educators to continue to explore ways to streamline this curriculum building process early in the preparation of new

teachers:

> I have become a lot more aware of what types of communication are possible..... I realize that this can be a great resource to teachers who need ideas
>
> It was great having someone to talk to about my ideas and the discussions sometimes led to better ideas
>
> Now maybe we can continue to do this after we've graduated. All we'd have to do is type up some things on our little FIRN mail and we can get information from teachers all over the country
>
> It would also be great to do projects such as this with other teachers once we are in the field
>
> I have seen the vast extents that telecommunications can travel to
>
> We actually are pioneers in a new era of education.

Traditional site-based professional collaboration to create curriculum has long been valued in our schools, but telecommunications permits an expanded team to come together online to pool their resources and expertise.